

PATENT APPLICATION  
PO-7946  
MD-02-19

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

APPLICATION OF	)	GROUP: 1796
	)	
JAMES Y. J. CHUNG ET AL	)	
	)	EXAMINER: P. SZEKELY
SERIAL NO.: 10/667,955	)	
	)	
FILED: SEPTEMBER 22, 2003	)	CONFIRMATION NO.: 1214
	)	
TITLE: POLYCARBONATE	)	
COMPOSITION	)	

**APPEAL BRIEF  
UNDER 37 C.F.R. §1.192**

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Sir:

The present Appeal Brief is submitted in support of the Notice of Appeal filed August 1, 2008.

**I. REAL PARTY IN INTEREST**

The real party in interest for the present Application Serial No. 10/667,955 is Bayer MaterialScience LLC of Pittsburgh, Pennsylvania, by virtue of the assignments executed September 16, 2003 and June 30, 2004.

**II. RELATED APPEALS AND INTERFERENCES**

On August 1, 2008, a Notice of Appeal was filed in Application Serial No. 10/667,955. There are no pending appeals or interferences of which Appellants are aware that would be affected by or have a bearing on the Board's Decision in this appeal.

### **III. STATUS OF THE CLAIMS**

Appellants herewith appeal the final rejection of Claims 13-23. Claims 13-23 are pending and stand rejected. Claims 1-12 have been canceled. A complete copy of the appealed claims is set forth in the Appendix. Claims 13-23 are the subject of this Appeal Brief.

### **IV. STATUS OF AMENDMENTS AFTER FINAL**

A Response under 37 CFR §1.116 was filed on June 13, 2008. In the Advisory Action dated June 27, 2008, the Examiner indicated that the Response would be entered but it did not place the application in condition for allowance because,

The definition of nanoclay cited by applicants in the 9<sup>th</sup> edition of Hawley's is missing from both the 10<sup>th</sup> and the 13<sup>th</sup> editions, proving that it was considered an incorrect definition. Ross et al. positively claims carboxylic acids proving that the optional status of said carboxylic acid was reconsidered and changed. Applicants' Declaration does not prove unexpected results for 10% carboxylic acid, only for 10% citric acid. The new citations are not new references just new proofs. The rejections and the finality of the rejections are maintained.

### **V. SUMMARY OF CLAIMED SUBJECT MATTER**

As recited in independent Claim 13, the present invention relates to a process for improving the impact performance of a thermoplastic molding composition (found at page 1, line 5) comprising mixing polycarbonate resin (found at page 1, line 6), nanoclay (found at page 1, line 6) and carboxylic acid (found at page 1, line 7), said nanoclay being present in an amount of 0.1 to 20 percent relative to the weight of the polycarbonate (found at page 1, lines 6-7), said acid being present in an amount of 1 to 20 percent relative to the weight of the nanoclay (found at page 1, lines 7-8), said nanoclay having an average platelet thickness ranging from 1 to 100 nm (found at page 6, lines 28-29), and an average length and average width each independently one of the other ranging from 50 nm to 700 nm (found at page 6, lines 29-30), said performance improved in comparison to a corresponding composition that contains no carboxylic acid (found at page 7, lines 16-17).

## **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

1. Claims 13-15 and 20-23 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pat. No. 6,610,770 issued to Ross et al. with U.S. Pat. No. 5,178,730 issued to Bixler et al., U.S. Pat. No. 6,858,665 issued to Larson and U.S. Pat. No. 7,026,023 issued to Masuda et al. With respect to this ground of rejection, Appellants admit that Claims 13-15 and 20-23 stand or fall together.
2. Claims 13-23 stand rejected under 35 U.S.C. §103(a) as being rendered obvious by U.S. Pat. No. 6,610,770 issued to Ross et al. in view of U.S. Pat. No. 5,178,730 issued to Bixler et al., U.S. Pat. No. 6,858,665 issued to Larson and U.S. Pat. No. 7,026,023 issued to Masuda et al. With respect to this ground of rejection, Appellants admit that Claims 13-23 stand or fall together.

## **VII. ARGUMENT**

As will be set forth in detail below, Claims 13-15 and 20-23 are not anticipated by U.S. Pat. No. 6,610,770 issued to Ross et al. with U.S. Pat. No. 5,178,730 issued to Bixler et al., U.S. Pat. No. 6,858,665 issued to Larson and U.S. Pat. No. 7,026,023 issued to Masuda et al. Further, Claims 13-23 are not rendered obvious by U.S. Pat. No. 6,610,770 issued to Ross et al. in view of U.S. Pat. No. 5,178,730 issued to Bixler et al., U.S. Pat. No. 6,858,665 issued to Larson and U.S. Pat. No. 7,026,023 issued to Masuda et al. Accordingly the rejections under 35 U.S.C. §§102(e) and 103(a), should be reversed, and favorable action by the Board is respectfully requested.

### **A. The Rejection Under 35 U.S.C. §102(e) is Improper**

Claims 13-15 and 20-23 have been rejected under 35 U.S.C. §102(e), as being anticipated by U.S. Pat. No. 6,610,770 issued to Ross et al. with U.S. Pat. No. 5,178,730 issued to Bixler et al., U.S. Pat. No. 6,858,665 issued to Larson and

U.S. Pat. No. 7,026,023 issued to Masuda et al. As will be set forth below, Appellants submit that Claims 13-15 and 20-23 are not anticipated and the rejections thereof should be reversed.

1. *The Examiner's Rationale*

The Examiner has alleged at page 2, paragraph numbered 7 of the Final Office Action mailed May 2, 2008 that,

All rejections are maintained in view of the "Response to Arguments" below.

Applicant's arguments filed 3/21/08 have been fully considered but they are not persuasive. Admittedly, Teppo 5,495,989 discloses large particle size smectite clays in column 1, lines 30-67 and shows grinding these clays in the apparatus elucidated in the claims. However, this does not prove that the clays used by Ross et al. can be larger than applicants' claimed particle sizes. Firstly, Ross et al. teach grinding the clays in column 11, lines 5-9. Secondly, Ross et al. claim **organoclays** in claim 1, and **"organoclay" is a synonym for "nanoclay"**. See Vargas et al. 6,602,966, column 2, lines 65-67, Liang et al. 2008/0021138, paragraphs 0004, 0035, 0036, and 0040, Chan et al. 2008/0004391, paragraph 0073 and Guo et al. 7,250,477, column 15, lines 43-44. Nanoclays are called nanoclays because they are nanometer sized. The references cited in the rejection show that the particle sizes claimed by applicants are typical and thus obvious. The carboxylic acid addition by Ross et al. **is not optional. Claim 3 of the reference absolutely, definitely, positively claims carboxylic acids.** Why Ross et al. blends the claimed materials together is **immaterial**. Polycarbonate can be one of the organic materials, and it is positively claimed in claim 4 among 7 alternative polymers. One out of 7 is not virtually limitless. As far as the Declaration allegedly proving that the inventive process is not applicable to SAN, the examiner wishes to state that the so-called proof is not commensurate with applicants' claims. The Declaration shows the effect of **10% of citric acid** by weight based on the nanoclay, while claim 1 broadly claims **1-20% of any carboxylic acid** based on the nanoclay in the inventive composition. The evidence has to establish unexpected results for the entire claimed range, not only at one point. See *In re Harris*, 74 USPQ2d 1951, 1955 (Fed. Cir. 2005); *In re Costello*, 178 USPQ 290, 292 (CCPA 1073). (Emphasis in original).

In the Office Action, mailed December 19, 2007, at page 2, paragraph numbered 3, the Examiner stated,

Ross et al. disclose a polymer composition comprising smectite clay modified with one or more quaternary ammonium compounds, an organic material and a polymer. The concentration of the organic material is 1-50 wt.% based on the clay (claim 1). The clay and the organic material are present in a concentration of 1-40 wt.% of the polymer (claim 2). The organic material is a carboxylic acid. The polymer is a polycarbonate (claim 4). Ross et al. do not mention the particle size of ht clay, however Bixler et al. in claim 2 show the dimensions of hectorite used by Ross et al. (see claim 8), while Larson et al. show the dimensions of montmorillonite in column 5, lines 12-18 and Masuda et al. show the same in Examples 1-4, proving that the particle size is inherent in the nanoclay. The impact performance is inherent in the composition. The process is nominal comprising only the mixing of the ingredients. Applicants' claims are not novel.

2. The Claimed Compositions are Patentably Distinguishable From the Cited Reference

Ross et al. disclose a fire retardant polymer composition that contains clay (modified with quaternary ammonium compound) and an organic material. Appellants respectfully assert that nowhere do Ross et al. refer to impact performance or the improvement thereof, much less to the impact performance of the claimed polycarbonate.

Appellants dispute the Examiner's conclusory statement made in paragraph 3 of the Office Action December 19, 2007, that Bixler et al, Larson and Masuda et al were proof "that the particle size is inherent in the nanoclay".

Although Appellants will concede that nano-sized particles are inherent in nanoclay, Appellants assert there is nothing in the Examiner's alleged "proof" to permit his leap to the conclusion that the clay of Ross et al. is nano-sized. In support of Appellants' contention that not all clays are nano-sized, Appellants respectfully direct the Board's attention to U.S. Pat. No. 5,495,989 issued to Teppo which discloses clay particles as large as 707 microns (i.e., 707,000 nanometers). Appellants note that they cited Teppo solely for the purpose of refuting the Examiner's supposed "proof" during prosecution of the instant application. Appellants take exception to the Examiner's subsequent argument at paragraph 8

of the Final Office Action mailed May 2, 2008 regarding Teppo that, “[h]owever, this does not prove that the clays used by Ross et al. can be larger than applicants' claimed particle sizes.”

Appellants note that they not required to prove anything under 35 U.S.C. §102, which as the Board is well aware, begins with the words, “[a] person shall be entitled to a patent unless...” It is the Examiner who bears the burden of demonstrating that the clays of Ross et al. are nanoclays, based on its disclosure, if he wishes to use it as an anticipatory reference. It is a measure of the weakness of Ross et al. in this regard that prompted the Examiner to resort to secondary references in an attempt to do so. Further, Appellants aver that the Examiner's argument regarding Teppo does nothing to contradict their assertion that Ross et al. fail to disclose nano-sized clay. Such failure renders Ross et al. unacceptable as an anticipatory reference. The Examiner points to col. 11, lines 5-9 of Ross et al. (reproduced below for the Board's convenience) for the disclosure of grinding clay.

The reaction is preferably followed by drying and grinding the organoclay product. Incorporation of the organoclay into the plastic resin can be accomplished by mixing or blending the organoclay by any means that can create sufficient shear.

Appellants fail to appreciate how this passage can be taken as disclosing nano-sized clay and aver that there is simply nothing in the cited reference to support the Examiner's conjecture that mere grinding results in the claimed nano-sized clay. Indeed, at page 2, paragraph numbered 3 of the Office Action mailed December 19, 2007, the Examiner conceded that Ross et al., “do not mention the particle size of ht (*sic*) clay,”.

The term “organoclay” is defined at page 639 of “The Condensed Chemical Dictionary”, 9<sup>th</sup> Edition, Gessner G.Hawley as,

A clay such as kaolin or montmorillonite to which organic structures have been chemically bonded; since the surfaces of the clay particles, which have a lattice-like arrangement, are negatively charged, they are capable of binding organic radicals. When this type of structure is in turn reacted with a monomer such as styrene, a complex results that is known as a polyorganosilicate graft polymer.

Appellants respectfully draw the Board's attention to the fact that this dictionary-defined term is plainly not qualified by any parameter relating to particle size. The Examiner's speculation from the Final Office Action mailed May 2, 2008 that the term **"organoclay" is a synonym for 'nanoclay'** is simply not supported by the definition.

As to the Examiner's conclusory statement from the Advisory Action dated June 27, 2008 that "[t]he definition of nanoclay cited by applicants in the 9<sup>th</sup> edition of Hawley's is missing from both the 10<sup>th</sup> and the 13<sup>th</sup> editions, proving that it was considered an incorrect definition.", Appellants respectfully note that they are not required to "prove" the correctness of the definition. Further, Appellants feel obliged to point out that the dictionary definition they submitted in their Response of June 13, 2008 was for the term "organoclay" not for "nanoclay" and query what relevance the intermittently absent (and by the Examiner's reckoning, incorrect) definition of "nanoclay" from various editions of Hawley's has upon the definition of the term "organoclay" which as noted hereinabove, neither includes a particle size qualifier nor supports the Examiner's assumption that organoclay is synonymous with nanoclay.

The Examiner's argument at page 2, paragraph 3 of the Office Action mailed December 19, 2007, is that "[t]he impact performance is inherent in the composition. The process is nominal comprising only the mixing of the ingredients. Applicants' claims are not novel." Appellants respectfully direct the Board's attention in this regard to *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999), in which the Federal Circuit stated that, "[i]nherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." Furthermore, "[i]n relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original). Appellants aver that the Examiner has failed to meet this burden in the instant case.

Thus, Appellants assert that the Ross et al. is incontrovertibly inadequate as an anticipatory reference under 35 U.S.C. §102 despite the Examiner's determined efforts to make it otherwise. Ross et al. fail to describe or suggest the instantly claimed invention.

Therefore, Claims 13-15 and 20-23 are not anticipated by U.S. Pat. No. 6,610,770 issued to Ross et al. with U.S. Pat. No. 5,178,730 issued to Bixler et al., U.S. Pat. No. 6,858,665 issued to Larson and U.S. Pat. No. 7,026,023 issued to Masuda et al. and the rejection thereof under 35 U.S.C. §102(e) should be reversed.

**B. The Rejection under 35 U.S.C. §103(a) is Improper**

Claims 13-23 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Pat. No. 6,610,770 issued to Ross et al. in view of U.S. Pat. No. 5,178,730 issued to Bixler et al., U.S. Pat. No. 6,858,665 issued to Larson and U.S. Pat. No. 7,026,023 issued to Masuda et al. As will be set forth below, Appellants submit that Claims 13-23 are not rendered obvious by the cited combination of art and the rejection should be reversed.

*1. The Examiner's Rationale*

The Examiner has alleged at page 2, paragraph numbered 7 of the Final Office Action mailed May 2, 2008 that,

All rejections are maintained in view of the "Response to Arguments" below.

Applicant's arguments filed 3/21/08 have been fully considered but they are not persuasive. Admittedly, Teppo 5,495,989 discloses large particle size smectite clays in column 1, lines 30-67 and shows grinding these clays in the apparatus elucidated in the claims. However, this does not prove that the clays used by Ross et al. can be larger than applicants' claimed particle sizes. Firstly, Ross et al. teach grinding the clays in column 11, lines 5-9. Secondly, Ross et al. claim **organoclays** in claim 1, and **"organoclay" is a synonym for "nanoclay"**. See Vargas et al. 6,602,966, column 2, lines 65-67, Liang et al. 200810021 138, paragraphs 0004, 0035, 0036, and 0040, Chan et al. 200810004391, paragraph 0073 and Guo et al. 7,250,477, column 15, lines 43-44. Nanoclays are called nanoclays because they are nanometer sized. The references cited in the rejection show that the particle sizes claimed by applicants are typical and thus obvious. The carboxylic acid addition by Ross et al. **is not optional. Claim 3 of the reference absolutely, definitely, positively claims carboxylic**



**acids**. Why Ross et al. blends the claimed materials together is **immaterial**. Polycarbonate can be one of the organic materials, and it is positively claimed in claim 4 among 7 alternative polymers. One out of 7 is not virtually limitless. As far as the Declaration allegedly proving that the inventive process is not applicable to SAN, the examiner wishes to state that the so-called proof is not commensurate with applicants' claims. The Declaration shows the effect of **10% of citric acid** by weight based on the nanoclay, while claim 1 broadly claims **1-20% of any carboxylic acid** based on the nanoclay in the inventive composition. The evidence has to establish unexpected results for the entire claimed range, not only at one point. See *In re Harris*, 74 USPQ2d 1951, 1955 (Fed. Cir. 2005); *In re Costello*, 178 USPQ 290, 292 (CCPA 1073). (Emphasis in original).

*2. The Claimed Compositions are Patentably Distinguishable From the Cited Combination of References*

To one of ordinary skill in the art, Ross et al. disclose a flame retardant polymer prepared by incorporating organoclay in a polymer. The polymer of Ross et al. may be thermoplastic or thermosetting. Among the “wide variety of resins and plastic materials” included at col. 5, line 13-39. are SAN and polycarbonate. The organoclay of Ross et al.

at col. 5, lines 46 *et seq.* is stated to be “a reaction product obtained by the intercalation and reaction of (a) one or more smectite clays;(b) one or more quaternary ammonium compounds and/or (c) one or more organic materials.” (Emphasis added)

Clearly, to the reading of one of ordinary skill in the art, the reaction product of Ross et al. is of clay and either or both quaternary ammonium and organic materials.

Further, according to Ross et al. there is no difference in terms of flame retardance between (i) compositions that contain organic material and (ii) corresponding compositions where quaternary ammonium replaces the organic material and (iii) corresponding compositions that contain both organic material and quaternary ammonium.

Thus, to one of ordinary skill in the art, the disclosure of Ross et al. does not require the inclusion of organic material (c) contrary to the assertions above by the Examiner. Ross et al. at col. 10, lines 30-31 state, “[t]he amount of quaternary

compound and optional organic compound used can vary over wide ranges” and further at col. 10, lines 40-41 state, “[i]t is typical that component (c), if present, is used at an amount...” (Emphasis added). Appellants aver that Ross et al. could not be more explicit concerning the optional character of their organic material (c).

The present application has been supported by evidence showing (i) the criticality of carboxylic acid in the claimed invention and (ii) the difference between polycarbonate and SAN at the point of invention. As to the criticality of carboxylic acid in the claimed invention, the Examiner, using the instant Specification as a blueprint, appears to agree in the passage reproduced above from the Final Office Action mailed May 2, 2008 when he argues, “[t]he carboxylic acid addition by Ross et al. **is not optional. Claim 3 of the reference absolutely, definitely, positively claims carboxylic acids.**” (Emphasis in original). Unfortunately, Ross et al. disagree with the Examiner’s contention regarding the optional character of the carboxylic acid (i.e., organic material (c)) in their invention, at col. 10, lines 30-31 and col. 10, lines 40-41, as noted hereinabove.

Further, Appellants fail to fully appreciate the import of the Examiner’s argument regarding optional elements. Does he mean to suggest that those elements of an invention recited in dependent claims can not be optional? Perhaps he deems that only those elements “**absolutely, definitely, positively**” recited are not optional. Appellants are unaware of any case upholding either proposition and respectfully request the Board instruct the Examiner to provide them with a citation to one or withdraw his statement along with this ground for rejection. Appellants are under the impression that a reference disclosing optional inclusion of a particular component teaches compositions that both do and do not contain that component. *See, Upsher-Smith Labs. v. Pamlab, LLC*, 412 F.3d 1319, 1323, 75 USPQ2d 1213, 1215 (Fed. Cir. 2005). The fact that something may or may not be present scarcely appears to provide a convincing argument for its criticality as has been demonstrated in the instant invention.

Declaratory experimental evidence presented during prosecution demonstrates the surprising, unexpected and critical difference between polycarbonate and SAN in the claimed invention. The Examiner’s criticism of the

Declaration of one of the present inventors, Dr. James Chung, alleges insufficiency of the evidence. In this regard, the Board's attention is respectfully drawn to the following timeline:

- (i) The Declaration of Dr. Chung was submitted along with the Amendment filed June 11, 2007;
- (ii) the subsequent Office Action of August 1, 2007 contained no criticism of the declaratory evidence; and
- (iii) in his first reference to the Declaration of Dr. Chung in the Office Action of December 19, 2007, the Examiner made no mention of insufficiency.

In view of the above sequence of events, it is unclear why, having given up his first two opportunities to do so, the Examiner decided to initiate his questioning of the sufficiency of the evidence in the Final Office Action mailed May 2, 2008. Such a nearly eleven-month delay, including the issuance of two subsequent Office Actions after submission of the Declaration, appears to be counter to the spirit of 37 C.F.R. §1.104.

As to the substance of his criticism of the Declaration of Dr. Chung, the Examiner argues in the paragraph bridging pages 3 and 4 of the Final Office Action mailed May 2, 2008 that, "[t]he evidence has to establish unexpected results for the entire claimed range, not only at one point." In support of this assertion, the Examiner cites *In re Harris*, 74 USPQ2d 1951, 1955 (Fed Cir 2005) and *In re Costello*, 178 USPQ 290, 292 (CCPA 1073). As a preliminary matter, Appellants aver that implicit in Examiner's statement is a concession that the embodiment entailing 10% acid is in fact unexpected and therefore patentable. Appellants further aver that neither *Harris* nor *Costello* are presently relevant.

The court in *Harris* affirmed the Board's finding of *prima facie* obviousness of a nickel-based alloy. The claimed components and their ranges overlapped the components and ranges of a corresponding nickel-based alloy disclosed in the prior art. *Harris*' rebuttal evidence was deemed unpersuasive because it "had not shown that any results were unexpected". Both the claimed invention and the cited art in

*Harris* were directed to nickel-based alloys. In *Costello*, both the claimed invention and the cited art concerned an electroless nickel bath containing identical components in overlapping ranges.

Thus, in *Harris* and *Costello*, the claimed invention and prior art were identical in terms of subject matter and overlapping in terms of components and ranges. In contradistinction, the present claims recite a process for improving impact performance whereas, as stated elsewhere herein, Ross et al. disclose a flame retardant composition. Therefore, Appellants aver that there is nothing in either cited case to support the Examiner's position relative to sufficiency of evidence.

As stated hereinabove, Ross et al. fail to describe or suggest the instantly claimed invention. To one of ordinary skill in the art, Bixler et al. disclose nano-sized clay in a process for making paper; Larson discloses using nano-sized clay in a process for preparing a rubber composition; and Masuda et al. disclose nano-sized clay in a protective layer transfer sheet and printed product. None of these references suggest a process for improving impact performance.

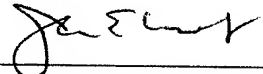
Appellants respectfully assert that the combined disclosures of Ross et al. with one or more of those secondary references falls far short of describing or suggesting the claimed process for improving the impact performance of a polycarbonate composition. Further, Appellants aver that Ross et al.'s disclosure of flame retarding technology suggests nothing relative to impact performance. The shortcomings of Ross et al. in the present rejection are not cured by any of the secondary references taken alone or in combination. The surprising, unexpected and critical difference between polycarbonate and SAN in the claimed invention has been demonstrated by experimental evidence in the Declaration of Dr. Chung.

Thus, the cited combination of references fails to render obvious Claims 13-23 and therefore the rejection under 35 U.S.C. §103(a) should be reversed.

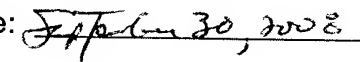
### **VIII. Conclusions**

Therefore, for the reasons set forth above, the rejections of Claims 13-23 under 35 U.S.C. §§102(e) and 103(a) are erroneous and the Board's reversal of those rejections is respectfully requested.

Respectfully submitted,

By   
John E. Mrozinski, Jr.  
Attorney for Appellants  
Reg. No. 46,179

Bayer MaterialScience LLC  
100 Bayer Road  
Pittsburgh, Pennsylvania 15205-9741  
(412) 777-3024  
FACSIMILE PHONE NUMBER  
(412) 777-3902  
s:\shared\kgb\7946apbrefJEM

Date of Signature: 

## **IX. CLAIMS APPENDIX**

13. A process for improving the impact performance of a thermoplastic molding composition comprising mixing polycarbonate resin, nanoclay and carboxylic acid, said nanoclay being present in an amount of 0.1 to 20 percent relative to the weight of the polycarbonate, said acid being present in an amount of 1 to 20 percent relative to the weight of the nanoclay, said nanoclay having an average platelet thickness ranging from 1 to 100 nm, and an average length and average width each independently one of the other ranging from 50 nm to 700 nm, said performance improved in comparison to a corresponding composition that contains no carboxylic acid.
14. The process of Claim 13 wherein the nanoclay is modified with a member selected from the group consisting of quaternary ammonium salt and quaternary phosphonium salt.
15. The process of Claim 13 wherein the amount of nanoclay is 0.1 to 15 percent.
16. The process of Claim 13 wherein the nanoclay is natural montmorillonite.
17. The process of Claim 14 wherein the quaternary ammonium salt is based on at least one member selected from the group consisting of dimethyl, dihydrogenated tallow with a chloride as a counter anion and dimethyl, hydrogenated tallow, 2-ethylhexyl with methyl sulfate as a counter ion.
18. The process of Claim 13 wherein the carboxylic acid is aliphatic.
19. The process of Claim 18, wherein the aliphatic acid is citric acid.
20. The process of Claim 13 wherein the amount of a carboxylic acid is 5 to 15 percent relative to the weight of the nanoclay.

21. The process of Claim 13 wherein the amount of a carboxylic acid is 8 to 12 percent relative to the weight of the nanoclay.
22. The thermoplastic molding composition prepared by the process of Claim 13.
23. The thermoplastic molding composition prepared by the process of Claim 14.

---

**X. EVIDENCE APPENDIX**

None.



**XI. RELATED PROCEEDINGS APPENDIX**

None.